

REMARKS

Claims 1 - 20 are in this application and are presented for reconsideration. By this Amendment, Applicant has amended claims 1-17, added new claims 19-20 and made various minor changes to the specification and claims to improve the clarity and style of this application and also to highlight the important combination of features which define over the prior art as a whole. The Office Action dated July 13, 2005 withdrew claim 18 from consideration.

Applicant thanks the Examiner for the careful reading of the application, and for providing suggestions to the claims. Applicant has added new claims 19 and 20 which are based on page 4 of the specification and also is similar to claims 4 and 5 but is drawn to an apparatus instead of to a process. The new claims do not add any new matter to the application. Claims 1 and 10 have been amended to properly clarify the subject matter which defines over the prior art. The amended claims 1 and 10 do not add any new matter to the application and are fully supported at page 4, lines 21-30 of the specification.

By this Amendment, the Applicant has amended the specification and several claims to overcome the Examiner's rejections and respectfully makes assertions for overcoming the rejections of the outstanding Office Action dated July 13, 2005 in the following paragraphs.

Specification

The Examiner has objected to the disclosure because of the following informalities:

The Office takes the position that the specification contains an error on page 4, lines 23-29, in which the first cylinder is referred to as "55" and the second cylinder as "56" and

suggested that these numerals appear to be reversed, since Fig. 1 shows the label "56" for the first cylinder and the label "55" for the second cylinder.

In response, Applicant has reversed the numbers in the specification.

The Office takes the position that the specification contains a typographical error on page 2, line 8 ("and-old").

In response, Applicant has amended the specification in the particular paragraph referred to by the Office Action.

Claim Rejections - 35 USC §112

Claims 2, 4-9, and 11 -17 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Office takes the position that claim 2 is indefinite in reciting "throughout its development", because it is unclear to what "its" refers, and therefore, it is unclear what development is being referred to.

In response, Applicant has amended claim 2 to overcome this particular rejection.

The Office takes the position that claim 4 is rendered indefinite by the recitation of the thread being unwound from a bobbin "through a motor means", because it is unclear how a thread can travel through a motor. The Office Action states that it appears that the motor means drives the pull unit, but the thread does not actually travel through the motor and requests a more precise and clear language in reciting the motor means.

In response, Applicant has amended claim 4 to overcome this particular rejection.

The Office takes the position that claims 6-9 are indefinite in reciting that the "abrasion is operated", because it is unclear in what manner the abrasion is "operated" since the abrasion is an effect on the yarn or a step performed.

In response, Applicant has amended claims 6-9 to overcome this particular rejection.

The Office takes the position that claim 6 recites "the orientation and/or distance values" without antecedent basis and such recitations are indefinite because it is unclear what orientation or distance values are being referred to.

In response, Applicant has amended claim 6 to overcome this particular rejection.

The Office takes the position that claim 7 is indefinite in reciting "which have different abrasive capacity", because it is unclear from what the capacities differ.

In response, Applicant has amended claim 7 to overcome this particular rejection.

The Office takes the position that claim 8 is indefinite in reciting "at times randomly differentiated", because it is unclear what is meant by this limitation. The Office Action states that it is unclear exactly what is "randomly differentiated" and it is unclear from what the differentiation occurs.

In response, Applicant has amended claim 8 to overcome this particular rejection.

The Office takes the position that claim 9 is indefinite in reciting "rotating about their own axes" because this recitation implies plural structures, however only a single abrasive means having a cylindrical shape was previously set forth.

In response, Applicant has amended claim 9 to overcome this particular rejection.

The Office takes the position that claim 11 is indefinite in reciting "it comprises" because it is unclear to what "it" refers.

In response, Applicant has amended claim 11 to overcome this particular rejection.

The Office takes the position that claims 12 and 13 are confusing in reciting that the abrasive means "consist of one or more brushes", because "consists of" is closed language, while "one or more" includes just one or a plurality of brushes. The Office suggests that this alternative should be more clearly recited.

In response, Applicant has amended claims 12 and 13 to overcome this particular rejection.

The Office takes the position that claim 13 recites "the bristles" without antecedent basis and claim 13 recites "the longitudinal axis" without antecedent basis and is therefore confusing, because a brush does not necessarily have a longitudinal axis and such a feature should be clearly set forth. Further, the Office Action states that claim 13 is indefinite in reciting "on more staves" because other staves were not previously set forth.

In response, Applicant has amended claim 13 to overcome this particular rejection.

The Office takes the position that claim 14 recite, "the bristles" without antecedent basis and thus is confusing and claim 16 is confusing in reciting that the abrasive means "consist of one or more cylinders", since "consists of" is closed language, while "one or more" includes just one or a plurality of cylinders. The Office suggests this alternative should be more clearly recited.

In response, Applicant has amended claims 14 and 16 to overcome this particular rejection.

The Office takes the position that claim 17 recites "the orientation and/or distance values" without antecedent basis and such recitations are indefinite because it is unclear what orientation or distance, values are being referred to.

In response, Applicant has amended claim 17 to overcome this particular rejection.

Claim Rejections - 35 USC § 102

Claims 1, 2, 6-8, 10, 12, 13, 16, and 17 have been rejected under 35 U.S.C. §102(b) as being anticipated by the U.S. Pat. No. 2,278,879 to Hunter (the "Hunter '879" reference, hereinafter).

The Hunter '879 reference discloses a process for the production of yarn containing filamentous nubs which comprises severing some of the filaments of a continuous filament yarn at intervals along the length thereof, and gathering and entangling the end portions of said severed filaments into spaced compact bunches along the length of either of the filaments of the yarn remaining unsevered at said intervals.

However, Applicant respectfully disagrees that the Hunter '879 reference anticipates the present invention as claimed in claims 1, 2, 6-8, 10, 12, 13, 16 and 17. The present invention as amended now includes combination of features which clearly define over this prior art reference. Specifically, the independent claims 1 and 10 now specifically recites the combination of features that states the two supports are designed to receive and return the

thread to other of the two supports at least three times and sustain the thread by defining a suspended length, whereby the thread winds up around two supports through a set of several passages.

The guides 74 and 76 of the Hunter '879 reference clearly do not include receiving the thread to return the thread to each other at least three times to effect several passages. The dependent claims 2, 6-8, 12, 13, 16 and 17 of the present invention as claimed also include this feature and therefore are not anticipated by the Hunter '879 reference.

In other words, the effect of having an apparatus that provides for at least three passages of threads allow for an abrasive effect on a greater extent of the thread in a limited overall dimension of the device as claimed.

At the same time, the effect of the action of the abrasive device on the thread's portion leading to cylinder 55 and respectively to cylinder 56 is different, so that each portion of the thread is abraded several times and alternatively in both of the longitudinal directions (or both the directions defined by a possible inclination angle of the abrasive device in respect to the thread path).

Therefore, Applicant finds that the Hunter '879 reference does not anticipate the current invention and there is no suggestion or motivation to use the teachings of the reference to provide the combination as claimed.

Claims 1, 2, 3, 6-8, 10 and 17 have been rejected under 35 U.S.C. 102(b) as being anticipated by the U.S. Pat. No. 3,140,526 to Tlamicha (the "Tlamicha '526" reference,

hereinafter).

The Tlamicha '526 reference discloses a method of abrading filaments of highly molecular plastics on an abrading element, the diameter of which varies along its longitudinal axis, comprising the steps of positively rotating the element and continuously passing the filament substantially tangentially over the element in a direction oblique to the longitudinal axis thereof, whereby the filament while being abraded by its engagement with the element is positively turned about its own axis so that the entire surface of the filament will be abraded substantially uniformly on all sides and throughout its entire length and the original cross-section of the filament and its mechanical properties will remain substantially unchanged, the varying diameter of the element increasing the tendency of the obliquely extending filament to turn about its own longitudinal axis during the abrading operation.

It is Applicant's position that the Tlamicha '526 reference neither anticipates nor suggests the present invention as claimed in the amended independent claims 1 and 10. Specifically, as stated above, the present invention as claimed now includes the combination of feature whereby the two supports are designed to receive and return the thread to other of the two supports at least three times and sustain the thread by defining a suspended length, whereby the thread winds up around two supports through a set of several passages.

In contrast, the Tlamicha '526 reference only discloses a pulley 3 and a set of guide loops 7 whereby the thread in the Tlamicha '526 reference passes the pulley 3 only once and the guide loops 7 only once each. In fact, if the guide loops were threaded three times, device according to the Tlamicha '526 reference would not function properly to rotate the element and

have its mechanical properties substantially unchanged. Therefore, the independent claims 1 and 10 including the combination of feature described above are not anticipated nor suggested by the Tlamicha '526 reference. The dependent claims 2, 3, 6-8, and 17 also include the combination of features of the independent claims 1 and 10 respectively. Thus, these dependent claims are also not anticipated nor suggested by the Tlamicha '526 reference.

Also, Applicant respectfully disagree with the position taken by the Patent Office with regard to the rejected claim 3. Specifically, in connection with the rejected claim 3, it should be noted that the "cylinder" 5 of the Tlamicha '526 reference is actually a feeding bobbin, and is not cylindrical and it does not "support the thread defining a suspended length", the thread being supported by the adjustable brake 6.

As per the claimed "slotted cylinder", it may be argued that the Tlamicha '526 reference shows a slotted cylinder 3, but it should also be noted that when providing a multi-passage arrangement of the thread on cylinders 55, 56 as provided in the present invention as claimed in claim 3, it is important to provide at least one cylinder having a correspondent number of slots to guide the thread and to keep the distance among the various portions of the thread itself. Therefore, claim 3 as amended now provides for the combination of features that at least one of the two cylinders being slotted include a corresponding number of slots to guide the thread and to keep the distance among the various portions of the passages itself constant.

This feature is neither anticipated nor suggested by the Tlamicha '526 reference and therefore the present invention as claimed should be patented.

Claims 1, 2, 6-8, 9, 10, and 17 have been rejected under 35 U.S.C. 102(b) as being anticipated by the U.S. Pat. No. 3,831,360 to Horvath (the "Horvath '360" reference, hereinafter).

The Horvath '360 reference discloses a process for the continuous production of textured staple fiber structures from filament bundles of thermoplastic material, characterized by subjecting a bundle of endless filaments to temporarily high-twisting by means of a false-twist device and to heat-setting in the high-twisted state, and brining said bundle into fiction contact with grinding means while said bundle is in the high-twisted state upstream of the false-twist device thereby to convert thee bundle into a staple fiber structure.

Similar to the processes and devices according to the Tlamicha '526 reference and the Hunter '879 reference, the device and the process according to the Horvath '360 reference neither anticipates nor suggests the present invention as claimed in the independent claims 1 and 10. There are no passages and the supports or their equivalents according to the Patent Office, do not return the threads or their equivalents to each other at least three times. The dependent claims, 2, 6-8, 9, and 17 also include these features and are not disclosed in the Horvath '360 reference. Therefore, it is Applicant's position that the Horvath '360 reference neither anticipates nor suggests the present invention as claimed.

Claims 10, 16, and 17 have been rejected under 35 U.S.C. §102(b) as being anticipated by the U.S. Pat. No. 5,392,499 to Bertoldo (the "Bertoldo '499" reference, hereinafter).

The Bertoldo '499 reference discloses a method for surface treatment of wet fabric webs

in a finishing machine containing an external housing, provided with an inlet zone and an outlet zone, through which a fabric web to be treated is run, and at least one grinder roller rotatably arranged inside it, against which the fabric web is caused to slide. The surface treatment of the fabric is carried out by using abrasive diamond material as the grinding material for the grinder roller.

This reference is for a fabric and not for a thread. Therefore, it is utterly impossible to have a plurality of passages of threads being received and resent between two supports. Further, the only figure in the Bertoldo '499 reference clearly shows that the fabric is not returned to any one of the supports, but instead is directed to one direction only. Therefore, it is Applicant's position that this reference also fails to anticipate or suggest the present invention as claimed in the independent claim 10 and the dependent claims 16 and 17.

Claim Rejections - 35 USC § 103

Claims 12-15 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the Bertoldo '499 reference in view of the U.S. Pat. No. 6,269,525 to Dischler et al (the "Dischler et al. '525" reference, hereinafter). The Patent Office admits that the Bertoldo '499 reference fails to disclose abrasive means comprising of abrasive brushes and depends on the Dischler et al. '525 reference to show this feature.

Specifically, the rejection is based on the position that one having routine skill in the art would recognize that brushes comprising abrasive nylon bristles could be substituted for the

abrasive diamond particles of the Bertoldo '499 reference in order to provide different abrasive effects, and for use on finer or more delicate fabric. The Office Action states that such a modification of the Bertoldo '499 reference would result in the bristles being positioned on the staves 16 in place of the diamond grit, thus meeting the limitations of claims 12-15 and further postulates that it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide brushes having abrasive nylon bristles in place of the abrasive diamond grit on the staves of the roller (15) of the Bertoldo '499 reference, since such brushes are conventional in the art of abrading textiles as taught by the Dischler et al. '525 reference and their use in the apparatus of the Bertoldo '499 reference would permit treatment of more delicate fabrics or would permit the production of different end results in the mechanical treatment of the fabric.

The Dischler et al. '525 reference discloses a process for finishing fabrics having warp and fill yarns, comprising: 1) providing a textile fabric comprising a plurality of warp yarns, wherein at least a portion of the warp yarns are immobilized within a coating matrix; 2) subjecting at least a portion of the textile fabric comprising the immobilized warp yarns to a treatment selected from the group consisting of sanding, abrading, and napping, wherein the fibers remain substantially immobilized during and after the treatment; and 3) optionally, removing the coating matrix from the finished textile fabric of step 2).

It is Applicant's position that the Bertoldo '499 reference in view of the Dischler et al. '525 reference neither anticipates nor suggests the present invention as claimed. As stated above, the Bertoldo '499 reference does not include the combination of features as recited in

the independent claim 10. Claims 12-15 also include these combination of features and, therefore, the Bertoldo '499 reference in view of the Dischler et al. '525 reference can not provide any suggestion or motivation to provide such a feature-laden process or device.

Furthermore, the present invention provides a different approach as compared to the Bertoldo '499 reference or the Dischler et al. '525 reference and solves problems which Applicant has observed as noted above with regards to uniformly abrading the threads. As the Bertoldo '499 reference and the Dischler et al. '525 reference fail to teach and fails to suggest the feature of supports receiving and returning the threads, the Bertoldo '499 reference and the Dischler et al. '525 reference provide no teaching no suggestion to the person of ordinary skill in the art to provide the combination as claimed.

Furthermore, Applicant finds no incentive in either the Bertoldo '499 reference or the Dischler et al. '525 reference which would lead a person to all the structural features of the supports, with brushes and the bristles in claims 15-17. Claims 15-17 therefore cannot be obvious in view of the Bertoldo '499 reference and the Dischler et al. '525 reference.

Applicant further notes that the Bertoldo '499 reference and the Dischler et al. '525 reference do not provide any suggestion or motivation which would lead a person of ordinary skill in the art to believe that such multiple passageway of threads would provide for a uniform abrading for a much larger longitudinal supported area. Instead, the Bertoldo '499 reference and the Dischler et al. '525 reference lead a person of ordinary skill in the art to single thread treatment, which is completely different from the present invention as claimed.

Applicant also notes that there must be some suggestion or teaching in the prior art as

a whole which would lead the person of ordinary skill in the art to provide the combination as claimed. As the prior art as a whole fails to direct the person of ordinary skill in the art toward the claimed combination, the invention should be considered not anticipated, non-obvious and thus patentable.

Therefore, Applicant finds that the Bertoldo '499 reference and the Dischler et al. '525 reference do not anticipate the current invention and there is no suggestion or motivation to use the teachings of the references to provide the combination as claimed.

Claims 4, 5, and 11 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the Horvath '360 reference in view of the U.S. Pat. No. 5,110,517 to Lukhard et al. (The "Lukhard et al. '517" reference, hereinafter). The Patent Office admits that the Horvath '360 reference fails to disclose a step of controlling the motor of the pull unit or bobbin shaft on the basis of detected tension values which are detected by tension sensors and relies on the Lukhard et al. '517 reference to disclose that a thread processing unit including tension sensors 22, 22' which detected a tension value and are used to regulate the speed of the thread through the processing device based on these tension values.

The rejection is based on the position that one having routine skill in the art would recognize that it would be advantageous to provide tension sensors in the method and apparatus of the Horvath '360 reference in order to detect a tension value and to control the speed of the thread based on these values, and although the Horvath '360 reference does not specifically disclose motors which drive the rolls 3, 3' or the shaft of the bobbin, as in claims 4-5 and 11,

motors are conventionally used for driving rollers and other thread supports, as shown by Lukhard et al and it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide first and second motor means for driving the bobbin and rollers 3,3' in the method and apparatus of the Horvath '360 reference since motors are commonly used for driving rollers and other thread supports in thread processing devices, as shown by the Lukhard et al. '517 reference, because motors are readily available, economical, and easily controlled and adjusted and it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide tension sensors and control means which drive the motors in response to the detected tension in the method and apparatus of the Horvath '360 reference in order to provide optimally controlled conditions for the thread processing, as taught by the Lukhard et al. '517 reference, and so as to feed the thread at a speed which results in the desired tension level, as is conventional in the art.

The Lukhard et al. '517 reference discloses a method and apparatus for de-registering drawn crimped nylon multi filament tow includes the steps of stretching the tow under constant controlled tension at a temperature below the glass transition temperature of the nylon . The apparatus includes means for sensing the tension of the tow between the feed and draw sections of a stretching device and providing as signal representative of the tension sensed and a controller for changing the speed of the draw section actuated by the signal.

Applicant respectfully disagrees with this assessment and states that the Horvath '360 reference in view of the Lukhard et al. '517 reference fails to anticipate or suggest the present invention as claimed in claims 4, 5, and 11.

As per claim 4, please note that according to the present invention as amended in claim 4, it is relevant that the sensor means detect the tension and drive the motor means to keep the thread tension steady through the work as provided on page 4, lines 11 - 15 of the specification.

This combination of feature is not anticipated nor suggested by the prior documents including the Horvath '360 reference or the Lukhard et al. '517 reference.

The combination of features not taught by the prior art provides several improved effect for the present invention as claim. For instance, the present invention as claimed has the advantage of providing an effect of keeping steady the thread tension and to make uniform the abrading effect of the thread. There is no teaching nor suggestion of any structure to make uniform the abrading effect of the thread in the Horvath '360 reference or the Lukhard et al. '517 reference.

The above advantages are due to the combination of features as claimed. The advantages can not be obtained from the prior art. The invention solves the problem of uniform abrading which the prior art as a whole does not recognize. Absent a teaching or suggestion of the important feature of the invention, the combined references clearly do not direct the person of ordinary skill in the art toward the combination as claimed.

Therefore, it is Applicant's position that claims 4, 5, and 11 as provided in the present invention as claimed are not anticipated nor suggested by the Horvath '360 reference in combination with the Lukhard et al. '517 reference.

As the prior art fails to suggest the combination of features as claimed, Applicant respectfully requests that the Examiner reconsider the rejection in view of the amended claims

and in view of the discussion above. Applicant respectfully solicits allowance of this application.

It is applicant's position that all claims are now allowable. Should the Examiner determine that issues remain that have not been resolved by this response, the Examiner is requested to contact Applicant's representative at the number listed below.

Favorable action is requested.

Respectfully submitted
for Applicant,

By:


John James McGlew

Registration No. 31,903

McGLEW AND TUTTLE, P.C.

JJM/DWK:
71363.8

DATED: October 11, 2005
BOX 9227 SCARBOROUGH STATION
SCARBOROUGH, NEW YORK 10510-9227
(914) 941-5600

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Toni Ann Fonte
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Toni Ann Fonte
SIGNATURE

DATED: October 11, 2005
 McGLEW AND TUTTLE, P.C.
 BOX 9227 SCARBOROUGH STATION
 SCARBOROUGH, NEW YORK 10510-9227
 TELEPHONE: (914) 941-5600
 FACSIMILE: (914) 941-5855